



THE INTERNATIONAL POTATO CENTER

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THE 1975 BUDGET DOCUMENT OF CIP

The budget proposal was prepared by CIP management and staff and constitutes a formal request to the Consultative Group on International Agricultural Research for donor support of the 1975 budget. This budget was reviewed and approved by CIP Board of Trustees at the Annual Meeting in Lima, Peru, on May 27, 1974.

Mariano Segura, Chairman
CIP Board of Trustees

Richard L. Sawyer
Director General

The International Potato Center (CIP) is a scientific institution, autonomous and non-profit making, established by means of an agreement with the Government of Peru with the purpose of developing and disseminating knowledge for greater utilization of the potato as a basic food. International funding sources for technical assistance in agriculture are financing the Center.

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1. ORIGIN AND OBJECTIVES

1.01 CIP is a relatively new institution. The organizational agreement was signed with the Government of Peru on January 20, 1971. The first funding for program activities was received in 1972, and due to the late assignment of money, most expenditures and staff additions were made in the last part of the year. In spite of this, CIP has made rapid progress in the development of facilities, the staffing of positions and the initiation of program activities.

1.02 CIP is a single-crop institute, devoted to the tuber-bearing species Solanum, the white or Irish potato. Peru has had a strong potato research program for some years, assisted originally by North Carolina State University under a grant from U.S.AID who also provided planning money for the initiation of CIP. This gave the initial impetus to the establishment of CIP. In addition, there has been a vigorous Rockefeller International Potato Program which has made important contributions over the past 25 years, and this also is now incorporated into CIP. CIP through research contracts has also linked into ongoing potato improvement work at other institutions. This combination has had the effect of providing CIP with ready, ongoing projects, so that initial progress has been much more rapid than could otherwise have been the case.

1.03 The basic objectives of the Center are to

- a) Increase the yielding capability and efficiency of production in the developing countries where the potato is being grown, and
- b) Increase the ecological region of adaptability of the potato, including the lowland tropics.

In pursuing these objectives, in which resistance to disease and pests has such an important part to play, CIP can be expected to make major contributions in the form of disease-resistant germ plasm which will be of real value not only to the developing countries, but to the developed temperate-zone countries as well.

1.04 The statutes of CIP state that to carry out its objectives the Center will

- a) Conduct research programs to contribute to the improvement of potato production and other tuberous roots, both nationally and internationally.
- b) Collect, maintain and distribute germ plasm in order that it may be used both nationally and internationally.
- c) Provide assistance in the development of related institutions which might be established in Peru or headquartered elsewhere.

- d) Train potato technicians under the leadership of high-level scientists.
- e) Publish and distribute research results obtained.
- f) Establish an information center and organize a specialized library, including an herbarium.
- g) Organize conferences, forums, round tables and seminars, both nationally and internationally, concerning potato improvement activities.
- h) Participate in all other activities related to the goals of the Center.

1.05 Potatoes as a very successful crop in temperate climates have been bred and selected from the original, relatively narrow range of types imported from the Andean birthplace. They have been improved and modified to be well adapted to temperate regions, but not to the tropical regions where they originated. With genetic engineering as the tool, CIP is developing potatoes from the original and other sources of germ plasm so that varieties much better adapted to relatively high and cool areas of tropic zones can be produced. Very encouraging evidence exists, in addition, that good adaptation to the hotter, lowland tropics with their heavy load of potato pests and diseases is possible.

1.06 Less than 1% of the genetic variability in Solanum has been utilized in the development of existing varieties. Making wider use of genetic materials, and especially prospecting the germ plasm for field "horizontal" resistance (i.e., based on more than a single gene) to pests and diseases, can make enormously valuable contributions toward solving potato production problems in all regions of the world.

II. GENERAL PROGRAM IN RESEARCH

2.01 The Research Program of CIP has two basic components:

- a) Research conducted at CIP facilities.
- b) Research contracted at selected institutions where facilities and expertise already exist for solving problems for developing countries.

Through this interlocking approach, CIP has been able to initiate projects very quickly in each of the major program Thrusts which are:

1. Developing the World Potato Collection - Systematic collection, classification, maintenance, and distribution of all tuber-bearing Solanum species (potatoes).

2. Development of breeding techniques for and utilization of the tuber-bearing solanums to provide better adapted potatoes for developing countries.
3. Control of selected fungal diseases - first priority - late blight.
4. Control of selected bacterial diseases - first priority - bacterial wilt.
5. Control of selected viruses and insect vectors - first priority - viruses important in seed production.
6. Control of selected nematode pests - first priorities - the cyst nematode (golden) and the root-knot nematode.
7. Development of potatoes with wider adaptation to environmental stress and insect pests - priorities are cold resistance for the highland tropics and adaptation to the hot-humid tropics.
8. Improvement of general nutritional quality, protein yield and carbohydrate-protein balance in potato; the development of economical, scale neutral methods of storage and processing for developing countries.
9. Seed production technology for developing countries; tissue culture for disease elimination, rapid multiplication and distribution of new clones.
10. Outreach Program (and affiliated Socio-Economic projects) concerned with training personnel, the adaptation of research and the efficient distribution and utilization of the potato in developing countries.

Since CIP is a one-crop center, it is organized on a departmental basis for ease and simplicity of financial accounting and management. However, each of CIP's major program Thrusts involve more than one department. The approach thus is with a team of scientists cutting across departmental boundaries. Table 1 gives the man years and cost for each Thrust and the cost for supporting activities and administration in the 1974 and 1975 budgets. A further breakdown of Outreach and Training is given under the general discussion on the Outreach Program.

TABLE I

BUDGETED MAN YEARS & COSTSFOR 1974 & 1975 FOR MAJOR PROGRAM THRUSTS AT CIP

THRUSTS	DEPARTMENTS INVOLVED	MAN YEARS				ANNUAL COST	
		Principal		Support		(In thousands \$)	
		1974	1975	1974	1975	1974	1975
1. Collection	Taxonomy-Breeding-Pathology-Physiology	1.0	1.0	1.3	2.0	52	70
2. Utilization	Breeding-Taxonomy-Pathology-Physiology	1.5	1.7	3.0	3.5	125	141
3. Fungal Diseases	Pathology-Breeding	1.2	1.2	2.5	2.0	95	100
4. Bacterial Diseases	Pathology-Breeding	1.0	1.0	1.0	2.0	65	80
5. Viruses	Pathology-Breeding-Physiology	1.0	1.0	2.5	2.0	100	120
6. Nematodes	Nematology-Breeding-Pathology	1.0	2.0	1.8	3.5	82	122
7. Adaptation	Physiology-Pathology-Breeding	1.5	1.5	1.5	3.0	85	115
8. Nutrition	Physiology-Breeding	.8	.8	2.0	2.0	60	70
9. Seed Technology	Physiology-Pathology-Breeding	.8	.8	2.0	2.0	70	80
10. Outreach & Training	Outreach & Training-all departments	3.0	3.0	4.7	6.0	533	680
T O T A L		12.8	14.0	22.3	28.0	1,267	1,578
11. Service Activities - Including library doc. & information service, general operations, supplies, communications, etc.		--	--	5.6	7.0	229	276
12. Administration		4.6	4.7	2.0	2.0	237	284
		17.4	18.7	29.9	37.0	1,733	2,138

Following is a summary of the progress within each Thrust and the plans for 1975.

Development of the World Potato Collection

2.02 During 1973, CIP conducted two field expeditions collecting 717 native varieties in the departments of Ancash and La Libertad in May, and an additional 330 from the department of Lima in June and July. Plans for five collecting expeditions in 1974 were completed in December. Collecting will continue in 1975 in accordance with the five-year program established at the International Planning Conference in early 1972.

2.03 A vigorous start has been made in classifying the individual entities in the collection, approximately 530 taxonomic determinations as well as more than 400 chromosome counts have been completed. Eighty hybrid clones of potential breeding value were introduced from Europe and Mexico; 600 accessions have been donated from Chile, Colombia and Sturgeon Bay, Wisconsin. At present CIP has more than 5,000 tuber-bearing *Solanum* accessions. A measure of the potential value and interest in the collection is the fact that approximately 8,000 samples were distributed for testing to 31 scientists around the world.

2.04 Basic studies into the origin and taxonomy of triploid potatoes in native cultivations in Peru are being studied through controlled diploid-tetraploid crosses. This is necessary in order to learn how to utilize some of the valuable characteristics such as frost resistance and high total solids found in triploids.

2.05 In early November nearly 4,000 clones, 15 tubers of each wherever possible were planted at Santa Ana, Huancayo, for maintenance and distribution for testing. In addition, 750 cultivars were increased at La Molina for distribution in early 1974, and 70 clones of wild species were grown in screenhouses. Open pollinated seed was collected from plants grown at Huancayo and is now available for 2,200 clones, or 68% of the cultivars now listed in the collection.

Utilization of the Tuber-bearing Solanums

2.06 The interlocking CIP Core and Contract research projects have been effectively exploiting Andean diploid and cultivated tetraploid potato species. The program involves three outstanding research teams: at North Carolina State University, Cornell and Wisconsin. An International Planning Conference to develop CIP's five-year program with this Thrust is being held in 1974. It is expected that the same basic program will continue through 1975.

2.07 North Carolina Contract - From crosses amongst diploid designed to isolate and identify superior diploid clones, 11,670 seedlings from 113 families have been selected. A total of 11,760 individual selections from the crosses will be screened in 1974. Included in the approach is frost resistance and high energy content of tubers.

2.08 Selections from the diploid contract work in North Carolina were superior to native clones when grown in the lowland tropics in Peru in 1973 at the jungle location at San Ramon.

2.09 Cornell Contract - A 51-page summary report was submitted by the seven-man team involved in CIP contract research at Cornell during 1973. An evaluation of the older phases of the Andigena selection work can be summarized as follows:

- a) 50 clones had high levels of general resistance to Phytophthora infestans (late blight) in New York and Toluca Valley, Mexico, tests.
- b) 32 clones had resistance to mixed populations of five Meloidogyne (root-knot nematode) species.
- c) Resistance to leafhoppers, plant bug and aphids was variable. A few clones in each family examined appeared to be quite resistant.
- d) Andigena X tuberosum hybrid possessed a wide range of adaptation to day length and a range from no-dormancy to long-dormancy.

2.10 Selection work recently initiated from a wider population showed that only 539 accessions (1,615 clones) tuberized of 23,531 hills from 807 accessions from eight Central and South American countries planted in May 1973. These form the base for further crosses and selection.

2.11 Nearly 3,000 clones resulting from crosses of diploid Solanum clones with resistance to race A, potato cyst nematode, were screened. Crosses with some species gave 90% or higher resistant plants. Field increases of 2,081 entries are intended for CIP cooperative trials in 1974.

2.12 Wisconsin Contract - Under this contract research is concerned with the utilization of haploids which have shown promise in introducing useful genetic diversity into new breeding populations. Yield tests of clones from various combinations of Tuberosum cultivars and diploid clones that produce haploids were conducted at two locations. The experimental tetraploids were more vigorous and higher yielding than the tuberosum cultivars in the trial. A limited number of clones are being tested in Peru.

Control of Fungus Diseases

2.13 Late Blight disease - Phytophthora infestans - Research is presently confined to breeding for general or field (horizontal) resistance. It is very necessary to develop lines of potatoes having long-term blight resistance without the need for costly fungicide control. A five-year plan of action for CIP work was developed at an International Planning Conference held in

1973 in Mexico where a large proportion of CIP's late blight program is conducted. The program for 1975 will follow the plans developed at the Conference.

2.14 During 1973, the entire CIP germ plasm collection near Huancayo was affected by a severe blight epidemic. It was possible to select 943 andigenum clones among 2,780 that had adequate levels of field resistance. A planting of Huancayo selections at La Molina, resulted in 135 of 816 clones which had combined blight resistance and early maturity. These were planted again late in the year at Huancayo together with 1,295 clones of the germ plasm collection.

2.15 Segregating populations of diploid potatoes were tested from the North Carolina Contract project. Eighty-five resistant clones with desirable characteristics other than late blight were selected at La Molina from 945 entities.

2.16 The Toluca (Mexico) late blight field test is recognized as the most severe in the world. A total of 2,700 clones submitted by eight institutions were under trial in 1973. Procedures for future tests under the new auspices of CIP have been formulated and entry forms for the test sent to previous users.

2.17 Wart - Synchytrium endobioticum - CIP has 38 clones which have been free of this serious tuber disease during two years of testing at Casablanca in the highlands of Peru. In 1973 these clones were also tested in two other Peruvian locations, Cuzco and Huamachuco in order to expose them to a wide variation of the disease. Crosses have been made among 18 clones to screen for material with high wart resistance and improved commercial quality. Forty-nine additional clones are being tested for resistance in second-year trials while 500 new clones are being tested for the first year in Casablanca. Canadian and European test plants have been planted at three test locations to determine the variability of this disease.

2.18 Smut - Thecaphora solani - Sanitation procedures have been defined by CIP and noted by the Ministry of Agriculture to minimize the spread of this serious tuber disease in Peru.

Control of Bacterial Diseases

2.19 Bacterial Wilt - Pseudomonas solanacearum - A number of research approaches were initiated in 1973 to determine the variation of this disease regarding behavior in culture, survival in soil and levels of infection to selected potato varieties as well as certain other potential susceptible crops mainly corn and tomatoes. A thorough review of the bacterial wilt problem in potatoes is presented in the CIP report of the Planning Conference on Bacterial Wilt. CIP's 1975 program will follow the published plan of work which was developed at the Conference.

2.20 The material to be part of an International Test for Wilt Resistance in 1974 was increased in Wisconsin for distribution to Peru, Costa Rica, Colombia and Brazil.

2.21 In addition, the seedling test that was developed by the Wisconsin Contract Project was used to screen large seedling populations, the survivors of which will be tested in the field in 1974. In Costa Rica, eight seedlings from previous screening tests with combined wilt and late blight resistance and good tuber type were selected in the field. In Peru, clones that have resistance to bacterial wilt have been increased for broad scale adaptation studies prior to release. In all, twelve countries are known to be using the Phureja source of resistance in programs to develop resistant varieties. Work on defining a chemical component of resistance is nearing completion and the relationship of this component to segregation for resistance is under consideration.

2.22 To determine whether *S. phureja* being utilized in breeding is resistant to a wide spectrum of bacterial wilt isolates, clones of selected crosses have been multiplied and will be challenged by bacterial isolates from seven countries. Tests will be performed in the period January to April 1974.

Control of Virus Diseases

2.23 The deterioration or "running out" of potato vigor is now known to be due to virus diseases. The viruses are spread to healthy plants by contact with diseased ones or by sap-feeding insects. It is therefore essential that CIP have the expertise to screen for viruses and to supply breeding stock to developing countries as free of viruses as possible.

2.24 Initial research is being concentrated on seven virus diseases of which the potato leaf roll virus and virus "Y" are receiving priority study. About 2,500 clones from the CIP germ plasm collection have been evaluated to determine the incidence of each of the important viruses. Five hundred Virus "S" - free clones, of which 350 had been previously tested were planted at Huancayo for inoculation with additional strains of the "X" virus. The possible viral origin of potato "cark" disease is being examined.

Control of Nematodes

2.25 Surveys are underway to determine the distribution of indigenous nematode populations in Peru and in other selected Andean regions. The root-knot nematodes (*Meloidogyne* sp.) have been found in most coastal potato growing areas, in the Sierra at Huancayo and in field plots at La Molina. In 1973, a five-year plan for CIP activities in Nematode research was developed at an International Planning Conference. CIP's 1974 and 1975 program is following the guidelines established at the Conference.

2.26 More than 100 collections of nematodes were made late in 1973 containing potato cyst-nematodes. The collections are being evaluated to determine the variation (white vs. golden) in Peruvian populations.

2.27 Screening for resistance in foreign breeding material has commenced recently. CIP can better screen at its facilities where a wider variation of the pest occurs than in most other areas of the world where the cyst nematode is important. Resistance sufficient for many areas of the world is not sufficient usually in Peru. Material from both Germany and the United States was tested in 1973. Two families from Germany showed resistance to the white cyst nematode. Only 15 of 332 entities from the United States have given resistant readings in two consecutive trials. CIP is continuing the screening of the world collection for resistance to the potato cyst nematode. One thousand and six hundred clones have been examined with relatively little resistance to Peruvian populations. However, three "bitter" varieties (S. juzepczukii) have shown resistance in two tests with three nematode populations.

2.28 Following screening of 55 wild Solanum clones from the CIP germ plasm collection with four different Peruvian nematode populations, apparent resistance was identified in three clones.

Stress Adaptation

2.29 Some environmental factors which may cause destructive physiological stress in potatoes include excessive cold and heat, drought, toxic soil conditions and insect predation. At its jungle location, CIP is in the process of determining the limitations and problems that presently exist for adapting the potato to the lowland tropics where heat stress and the effect of temperature on diseases are important factors.

2.30 Cold Hardiness - Freezing injury is the principal limiting factor in growing potatoes in the higher altitudes of the Andean region. Research is underway to verify that the relative cold hardiness of excised leaves accurately reflects the relative frost hardiness of whole potato plants. Tests to the present show that certain varieties can withstand - 5.0°C (23°F). Plants which were subject to water stress (drought), or grown in different localities before subjecting to cold stress were not observed to have greater cold tolerance.

2.31 Probably the most valuable method of escaping freezing damage is by developing shorter maturing lines. The average Andean cultivated varieties mature in 150 to 180 days. Clones within CIP's breeding program have matured in less than 100-days with excellent yield and tuber quality in the highlands of Peru.

2.32 Insect Predation - Surveys are being conducted to establish initially an inventory of insects of potential seriousness to experimental field work in Peru. A comprehensive list of potential pests has been compiled of which the Andean weevil, leafhoppers and a number of species of aphids, particularly the peach aphid are noteworthy. Through the Cornell Contract resistance to stress caused by potato leafhoppers, the plant bug and aphids is being evaluated in all CIP crosses at Cornell.

Quality Improvement

2.33 Through an intensive week-long Planning Conference on Potato Quality held in November 1973, a rigorous set of guidelines was established to evaluate the qualitative and quantitative aspects of potato protein as well as other nutritional qualities. CIP's activities for 1974 and 1975 are within the guidelines established at the Planning Conference. Using the techniques recommended at the Planning Conference a number of clones have been identified with double the usual level of percent total protein normally encountered.

2.34 Prior to his untimely death (March 1974) CIP staff member, Dr. Robert Lüscher, described in specific detail a microbiological assay to estimate the relative nutritive value (RNV) of potato protein. It has been established that RNV data correlates well with net protein utilization data obtained from rats. Participants at the Planning Conference strongly endorsed the use of Streptococcus zymogenes in a bio-assay technique that correlates RNV with reference to casein and "available" methionine.

Seed Production

2.35 The indexing of selected clones for possible virus infection and multiplication of virus-free material is an important Core function to provide clean breeding lines for Outreach use.

2.36 In 1974, CIP will be holding an International Planning Conference on Seed Production Technology for developing countries which will identify a five-year plan of action for CIP activities with this Thrust. Commencing in late 1973, several Peruvian cultivars from basic seed were planted ready for indexing and seed of the variety Compis, freed from known viruses by meristem-tip culture, is being multiplied. Tubers in store awaiting indexing include wart disease resistant clones, blight resistant lines and cultivars from Germany resistant to several fungal and viral diseases. CIP also has tubers from Scotland awaiting multiplication which produce plants having characteristic reactions to soil-borne viruses.

2.37 A system is being established which will allow from 30 to 50 clones to be freed from diseases by meristem culture every three months. These facilities being developed for potato tissue and cell cultures will be used in the eradication of viruses from breeding material. In October 1973, meristem cultures were initiated to test procedures under facilities available at that time. Successful meristem cultures were actively growing after eight weeks of culture; contamination was relatively low (15%).

III. OUTREACH

3.01 The basic objective of this Thrust is to implement the goal of CIP through Outreach to raise the productivity of developing countries where need and opportunity are the greatest. To achieve a production breakthrough in developing countries, Outreach personnel are working with national leaders to create a capacity in selected countries to utilize the technology developed by the Center. In 1973, the philosophy and strategy of the Outreach Program was outlined in a paper which serves as the initial guideline for development of the Outreach Program.

3.02 For its regional approach in Outreach, CIP has divided the world into seven zones which are:

<u>REGION</u>	<u>ZONES</u>	<u>POTENTIAL IMPACT COUNTRIES</u>
I	South America	Peru, Brazil, Chile (Ecuador, Bolivia)
II	Mexico, Central America and the Caribbean	Guatemala, Costa Rica
III	Tropical Africa	Kenya, Nigeria, Ethiopia
IV	Middle East and North Africa	Algeria, Lebanon (Egypt-training centers)
V	Non-Arab Muslim countries	Turkey, Pakistan, Iran
VI	India	States of Punjab, Uttar Pradesh, Nepal
VII	Southeast Asia	Sri Lank, Indonesia, Bangladesh

3.03 By the end of 1973, CIP had Outreach staff members in Regions I, II and IV and had held training courses in Regions I, II and III. Although CIP staff members visited the other regions, no programs have yet begun in Regions V, VI and VII. Selected impact countries are being, and will continue to be reviewed as CIP capabilities for assessment are expanded.

3.04 The program for Zone I is headquartered at CIP's Central facilities in Peru. The program for Zone II is in the Toluca Valley at the facility which was formerly the Rockefeller Foundation International Potato Program. The program for Zone IV was activated in 1973 and is headquartered at the Arid Lands Agricultural Development Program in Lebanon.

3.05 The distribution of CIP technology is dependent on the development of capable regional bases. The potato is vegetatively propagated and thus there are many more quarantine problems with the distribution of clonal material than with the distribution of botanical seed as with rice, corn, wheat and beans. Botanical seed of the potato may still be one of the major sources of distribution of new technology to the regions. The seed must be grown to tubers which will need assessment, possible further adaptive research to the region, and multiplication for regional distribution.

3.06 Since its initiation, CIP has been established with the dependency on Core funding for the development of a portion of its regional program. All funding of regional programs is presently from Core funding. CIP expects to have several special projects funded prior to the end of 1974 which would compliment some of the regions already activated and permit the initiation of work in other regions.

3.07 Table 2 gives a breakdown of the staff and funding into regions for the 1974 and 1975 Core program budget. CIP will include special project information in its reporting when agreements have been signed and the definite amount of funding to be made available known. The regional costs include the intensive short-term training courses as discussed in the following paragraphs.

The CIP-General Outreach costs as listed in Table 2 include all of the formal training courses which are discussed in the following text.

The costs for John Niederhauser, the former head of the International Potato Program of the Rockefeller Foundation, are listed under administration as a consultant on Outreach and Training working as a part-time (3/4) basis since his retirement. Thus, his work is in Outreach, but his costs are included in Administration.

TABLE II
BUDGETED MAN YEARS & COSTS FOR 1974 & 1975 FOR
OUTREACH & TRAINING AT CIP HEADQUARTERS & IN THE REGIONS

<u>Departments Involved</u>		MAN YEARS				ANNUAL COST	
		Principal		Support		(In thousands \$)	
		1974	1975	1974	1975	1974	1975
CIP	General Outreach	3.0	3.0	1.0	2.0	286	410
Region I	Peru based at CIP	---	---	1.0	1.0	44	53
Region II	Mexico based at CIMMYT	---	---	1.0	1.0	45	50
Region III	Kenya based	---	---	.9	1.0	51	76
Region IV	Lebanon based at ALAD	---	---	1.0	1.0	107	91
TOTAL		3.0	3.0	4.9	6.0	533	680

Table 3 gives the man years of training by CIP for 1973 and what is included in the Core budget for 1974 and 1975. As special project money becomes identified and available, training will be expanded particularly in the area of non-degree training.

TABLE III
MAN YEARS OF TRAINING FOR 1973 AND
WHAT IS INCLUDED IN THE BUDGETS FOR 1974 & 1975

	<u>1973</u>	<u>1974</u>	<u>1975</u>
Non degree	7	10	14
Masters	6	9	11
Ph.D	5	8	9
Post doctorate	5	8	10

Short-term Training Courses

3.08 A major responsibility of the Outreach Program is training of personnel to staff national potato programs. In 1973, the Outreach Program conducted the following short-training courses.

3.09 Region I - South America - The first course in potato seed production was held in Lima in January/March 1973. The six-week course emphasized practical training in the Sierras as well as instruction at La Molina in Physiology, Pathology, Entomology, Soils and Storage problems related to potato seed production.

3.10 In addition to regularly scheduled training courses, specialized training was offered to candidates from the Middle East (Algeria) and Bolivia. The trainee from Algeria spent three weeks in Peru in October for specialized training in Seed Production, Virology, Entomology, Bacterial and Fungal diseases. The trainee from Bolivia received specialized training in chromosome counting techniques and management of germ plasm collections. CIP Outreach personnel also collaborated with the Peruvian National Potato Program at La Molina in organizing training courses for farmers in Barranca and Cañete (April 1973). A large number of CIP staff participated in two major Peruvian potato production symposia. CIP's regional training officer helped develop and coordinate these symposia.

3.11 Region II - Mexico, Central America and the Caribbean (Mexico). - A course in potato production technology was held in Mexico in July/August 1973. The seven-week course was held in the Toluca Valley, Mexico State, with visits to the principal potato cultivation areas in Mexico. Furthermore, technical instruction at the Agricultural College at Chapingo was given on Virology, Mycology, Nematology. Special emphasis was given to seed production and on the development of potato varieties resistant to late blight. Seven trainees from five countries participated in the course: Mexico 2, Guatemala 1, Honduras 2, Cuba 1, Algeria 1.

3.12 Region III - Tropical Africa - CIP sponsored a short course in potato production jointly with the Kenya National Potato Program. Twenty-five trainees from seven African countries participated in the two-week course held in Nairobi. The Kenya National Potato Program, O.D.A. and CIP jointly provided the instruction for the course which emphasized varietal identification, disease control, seed production and potato quality. Plans are being finalized to activate this regional program in the first part of 1974 and place a CIP scientist in Kenya.

Formal Training Courses

3.13 There are formal training programs at CIP at the Masters, Ph.D. and post-doctoral level.

- a) Training leading to the Master Degree. This is in conjunction with the National Agrarian University adjacent to CIP's facilities in La Molina. There were eight scientists entered in Master Degree training courses by CIP in 1973.
- b) Training leading to the Ph.D. Degree. This is in conjunction with institutions in developed countries where formal course work is accomplished with a major portion of the thesis work done at CIP facilities in Peru. There were five scientists entered in this type of training program with CIP in 1973.
- c) Post-Doctorate Training. There were seven newly trained Ph.D. scientists on post-doctoral appointments at CIP in 1973. CIP is using some post-doctoral positions to look at future young staff members, and to train scientists for possible regional assignments as the Outreach program is expanded.

3.14 The function of the socio-economic program is to provide information of a socio-economic nature in order to facilitate the successful operation of the program of the Center. Working closely with the Outreach Staff, CIP economist is analyzing data on price levels and price fluctuations, marketing and storage, nutritional levels and farm management practices to determine the relative needs in the various countries of a CIP Outreach program of technical assistance, as well as the possibilities of achieving significant production improvement in those countries within a given period. The accumulation of knowledge concerning the needs in terms of scientific discoveries, as well as the possible economic and social benefits of these biological innovations will enable the economist to help CIP management in determining the research priorities in the Center.

3.15 The economics program, which only recently began operations in November of 1973, has tentatively defined two major areas for analytical work:

- a) Outreach Support. Analysis of consumption and price data, as well as FAO Food Balance Tables, to derive a picture of actual and potential importance of potato production in countries which may be recipients of Outreach programs. This is being supplemented by personal visits to the countries, and discussions with governmental, private enterprise, and academic personnel on these issues.

- b) CIP Program Priorities. Involves obtaining a thorough knowledge of the projects of the various departments, their costs and possible payoffs, and relating these to recipient country needs.

IV. PHYSICAL FACILITIES, STAFFING AND BUDGET

4.01 CIP's requirement for physical facilities have largely been met. The Peruvian Government has constructed a building providing 18,000 sq. ft. of office and laboratory space at the La Molina Experiment Station adjacent to the National Agrarian University on the outskirts of Lima. If it had been necessary to provide CIP with capital funds for the building, another 1/2 million dollars would have been required. In addition to the building, the Government has provided the land adjacent for necessary headquarters field work. The Government also has provided land for two other essential facilities; one at Huancayo in the Sierra at high-altitude, where a major portion of the field multiplication and evaluation of the world potato collection is conducted; and an additional area at San Ramon, two hours by road from Huancayo, for a low-altitude "jungle" station, where the work applicable to the warm-humid tropics is conducted.

4.02 The headquarters building provided by the Peruvian Government is now being utilized to capacity with all of the laboratory and office space equipped and occupied. The research which was being conducted temporarily in Peruvian facilities has been transferred to CIP's own facilities. Four large screenhouses (without glass), and the headhouse and laboratory for research involving soils, have been completed and are in use. The controlled environment greenhouse requested in the budget of 1974 is being erected and will be in use by mid 1974. Construction of the facility to house the refrigerated storages and the controlled environment growth chambers has been delayed and will not be completed until late in 1974 due to a shortage of steel within Peru.

4.03 In preparation for the electron microscope which has been programmed for purchase in 1976, CIP is requesting a modest sum of \$60,000 for 1975 and again for 1976 to build an extension onto the building which has been provided by the Government of Peru. There is no space available in the existing building and the electron microscope requires an especially firm foundation. This same extension will provide the extra space which even now is urgently needed for trainee office space. This will complete the physical facilities at La Molina giving a modest, economical and efficient unit, adequate for the foreseeable future.

4.04 A contract has been let for the construction of the facilities in Huancayo which were in the 1973 budget and construction is underway. This includes a laboratory, greenhouses, equipment, storage, superintendents quarters overnight facilities for Lima

based staff and development of the land including the irrigation system. The steel shortage in Peru delayed this building program so that some buildings will now be completed around August 1, 1974, and the rest by the end of 1974. There is a need for some additional modest housing on the Huancayo facility to permit senior staff to live there with family during the growing season (children vacation season). Included in the 1975 budget are four modest two-bedroom houses at a total cost of \$33,000. Also included in the 1975 budget are four additional fiber glass greenhouses at a total cost of \$22,000 for the Huancayo location.

4.05 The jungle facilities for the San Ramon area being provided in 1974 will be of a portable nature. CIP expects to move its investigations to lower elevations as it gains experience and learns more about the problems of potatoes in the hot humid tropics. The Government of Peru already owns the land at these lower elevations, which it will provide to CIP as needed or on a 20-year basis once the proper location has been identified.

Staffing

4.06 Principal staff are budgeted to increase from 17.4 man years to 18.7 man years in 1975. CIP expects to maintain its principal staff at approximately this level. Supporting professional staff will increase from 29.9 man years in 1974 to 37 man years in 1975. CIP expects to maintain its professional support staff at approximately this level. Other support staff will continue to increase slightly through the year 1976 as younger scientists become more thoroughly involved. Trainees will continue to grow as special project funding becomes available.

Budget

4.07 CIP's proposed budget for 1975 as compared with that for 1974 is as follows:

	<u>1974</u>	<u>1975</u>	<u>% Change</u>
	(U.S. \$ thousands)		
Core Operations	1,768	2,181	+ 23
Capital	<u>477</u>	<u>212</u>	- 56
	2,245	2,393	+ 7

4.08 The increase of \$413,000 in Core operations is for the following:

		<u>% of 1974</u>
Inflation	192	11%
Full-year costs of new staff & programs in 1974	104	6%
Costs of new staff & programs in 1975	109	6%
Contingency increase	8	

4.09 Details of the Core budget for 1975 presented according to program activity and according to organizational unit, are given in Annexes I and II, respectively.

Item I in Annex II includes service activities costs and administration. The service activities are divided mainly between the Lima headquarters and the Central highland facilities at Huancayo with a small amount only applicable to the jungle facilities at San Ramon. Although CIP is headquartered near Lima approximately fifty percent of its research activities are conducted in Huancayo. Competent supporting staff are being located at Huancayo to oversee the work originating from Lima. Temporary housing facilities are being developed to make it possible for senior Lima based staff to spend a portion of the growing season at Huancayo. There is presently no air transportation to Huancayo which is approximately six hours from Lima by car, thus requiring a constant flow of CIP vehicles between locations.

A Deputy Director has now been identified and is included in Annex II under item 2 with the costs of the office of the Director General. The costs of John Niederhauser as mentioned previously under the Outreach discussion, are also included with the costs for the office of the Director General, although his total work program is in Outreach.

4.10 Details of the Capital budget for 1975 are given in Annex VI. Capital requirements for 1975 are considerably less than for 1974. This is due to the fact that a working capital item of \$190,000 was included in the 1974 budget to help mitigate the cash flow problem being encountered. Capital expenditures planned for 1975, in keeping with previous years are modest, for equipment \$67,000; construction, \$115,000 and vehicles, \$30,000.

4.11 The official inflation rate for Peru in 1973 was 14%, for 1972 it was 7%. For the first three months of 1974, it is over 10%. These statistics come from the Dirección de Estudio, Análisis y Planificación Estadística, División de Precios e Índices, of the Government of Peru and are considered to be quite accurate. This data and its justification are provided by the Ministry every three months.

4.12 At its annual meeting in May of 1974, CIP Board of Trustees passed the following resolution:

"The Board recommends the use of established government inflation rates for future budget making, including 1975, and that the Consultative Group be requested to address this matter to all centers."

The Board accepted the budget which is presented here with the stipulation that it contains the inflation data in accordance with the resolution. As recommended by CIP Trustees, costs for 1975 have been increased over the level pertaining in 1974 by 14% to allow for inflation. Similar adjustments have been made for the years 1976-1978 as a one-time item in the annexes. To compensate for the inflation in 1974, a peace corp assigned person requiring only supporting costs is being utilized in a principal staff position, and a sabbatical scientist requiring only a small salary input in a principal staff position.

4.13 1974 Budget and 1975 Budget Problems - CIP continued to experience a cash-flow problem in early 1974. This should be alleviated by 1975 if the 1974 budget is fully funded since it included a working capital item. Inflation in Peru in 1973 was 13.76, almost double the amount placed in the 1974 budget. The compensations for this have been described in the previous paragraph. A serious steel shortage occurred in Peru during a major portion of 1973, which would not permit the use of some of the capital construction funds for the Huancayo facilities in 1973. These funds have been carried over for the same purpose as budgeted into 1974. Construction costs have increased greatly over the past year and the delay in construction will undoubtedly affect the final costs and require some dependency on the contingency fund.

GENERAL COMMENTS

As planned, CIP's major Core program developments are taking place during the years 1972-1974. Some increase in supporting positions is indicated in 1975 as principal staff settle in and increase their work load.

CIP's program development is based on the use of senior world scientists who participate in long-range (five years) planning conferences for each major program Thrust. These are rotated so that all Thrusts are covered every three years.

CIP's Board of Trustees are working members. Of ten trustees, five members of the Program Committee participated in the annual internal review in January of 1974. Three of the remaining five members are on the Finance Committee which met twice during 1973 outside of the annual meeting.

With the Core program development basically completed, CIP administration will now concentrate on the development of special projects in outreach to take potato improvement technology into the developing countries of the world. It is expected that four special projects will be initiated during 1974. Once the final agreements have been signed and the definite funding known, these will be included in CIP's reporting.

1975 BUDGET
THE INTERNATIONAL POTATO CENTER
Summary of Costs by Program and Activity 1972 - 1978
(US\$ thousands)

Major Activities	Actual		Estimate & Budget			Projected		
	1972 Core	1973 Core	1974 Est. Core	1974 Budget Core	1975 Budget Core	1976 Core	1977 Core	1978 Core
1. <u>Research</u>								
<u>Potato</u>	<u>186</u>	<u>451</u>	<u>754</u>	<u>734</u>	<u>898</u>	<u>945</u>	<u>1,002</u>	<u>1,080</u>
2. <u>Conference & Training</u>								
Fellowships	16	98	265	177	283	297	310	327
Workshops, Conferences, etc.	42	72	61	151	186	194	209	217
Training Staff	5	119	226	205	211	227	244	257
	<u>63</u>	<u>289</u>	<u>552</u>	<u>533</u>	<u>680</u>	<u>718</u>	<u>763</u>	<u>801</u>
3. <u>Library, Documentation & Information Services</u>								
Library	2	9	16	13	8	9	9	10
Documentation	-	-	5	11	39	41	43	46
Information	2	1	5	2	3	2	2	2
	<u>4</u>	<u>10</u>	<u>26</u>	<u>26</u>	<u>50</u>	<u>52</u>	<u>54</u>	<u>58</u>
4. <u>Support Operations</u>								
a. <u>Services Activities</u>								
Buildings & Grounds		11	2	20	23	25	29	31
Common Lab. Services		7.8	5	10	10	10	10	10
Tractor & Equip. Pool		0.2	4	7	12	13	15	16
Motor Pool	2	17	39	39	32	34	35	36
Station Operations		57	95	78	99	106	113	120
	<u>2</u>	<u>93</u>	<u>145</u>	<u>154</u>	<u>176</u>	<u>188</u>	<u>202</u>	<u>213</u>
b. <u>General Administration</u>								
Board of Trustees	1	10	20	19	23	23	23	23
Office of Dir. General	39	70	111	122	154	163	174	184
Executive Office	17	42	63	59	68	71	76	80
Controller & Accounting	6	24	18	33	35	38	40	43
Other	6	5	4	4	4	4	4	4
	<u>69</u>	<u>151</u>	<u>216</u>	<u>237</u>	<u>284</u>	<u>299</u>	<u>317</u>	<u>334</u>
	<u>71</u>	<u>244</u>	<u>361</u>	<u>391</u>	<u>460</u>	<u>487</u>	<u>519</u>	<u>547</u>
5. <u>General Operations</u>								
General Supplies	5	15	11	15	15	16	16	17
Services & Communication	3	13	26	28	29	28	30	29
Organizational Symposia	19	-	-	-	-	-	-	-
Other	1	2	3	6	6	6	6	6
	<u>28</u>	<u>30</u>	<u>40</u>	<u>49</u>	<u>50</u>	<u>50</u>	<u>52</u>	<u>52</u>
6. <u>All Other</u>								
Contingencies 2%	-	-	35	35	43	45	47	50
Prov. for Price Changes 7%	-	-	-	-	-	322	730	1,246
TOTAL CORE	<u>352</u>	<u>1,024</u>	<u>1,768</u>	<u>1,768</u>	<u>2,181</u>	<u>2,619</u>	<u>3,167</u>	<u>3,834</u>

1975 BUDGET
THE INTERNATIONAL POTATO CENTER
Summary of Manyears and Costs by Organizational Unit 1972 - 78
(US\$ 000)

By Organizational Unit	Actual				Estimate		Budget				Projected					
	1972		1973		1974		1974		1975		1976		1977		1978	
	Man- Years	Cost	Man- Years	Cost	Man- Years	Cost	Man- Years	Cost	Man- Years	Cost	Man- Years	Cost	Man- Years	Cost	Man- Years	Cost
1. Program Units																
Pathology	1.50	79	7.8	200	7.0	245	9.1	241	9.0	274	9	285	9	309	9	334
Nematology	.75	10	2.0	23	3.0	77	2.9	77	6.0	90	6	108	6	127	6	143
Genetic & Breeding	.75	63	3.9	172	6.5	198	7.3	210	7.0	261	7	273	7	282	7	309
Taxonomy		19	1.1	26	2.0	59	2.0	52	3.0	89	3	72	3	69	3	71
Physiology		-	1.1	30	6.0	175	5.9	154	8.0	204	8	207	8	215	8	223
Outreach & Training	3.00	63	5.0	289	11.5	552	7.9	533	9.0	680	9	718	9	763	9	801
Library, Doc. & Inf. Serv.		4	1.0	10	1.0	26	1.0	26	1.0	50	1	52	1	54	1	58
Total Program	6.00	238	21.9	750	37.0	1,332	36.1	1,293	43.0	1,628	43	1,715	43	1,819	43	1,939
2. Support Units																
a. Service Activities																
Buildings & Grounds		-		11		2		20		23		25		29		31
Common Lab. Services				7.8		5		10		10		10		10		10
Tractor & Equip. Pool				0.2		4		7		12		13		15		16
Motor Pool				17		39		39		32		34		35		36
Station Operation	.75	2	3.7	57	2.5	95	4.6	78	6.0	99	7	106	7	113	7	120
Sub-total	.75	17	3.7	93	2.5	145	4.6	154	6.0	176	7	188	7	202	7	213
b. General Administration																
Board of Trustees		1		10		20		19		23		23		23		23
Office of Dir. General	1.0	39	1.2	70	3	111	2.6	122	2.7	154	3	163	3	174	3	184
Executive Office	.75	17	1.5	42	3	63	2.0	59	2.0	68	2	71	2	76	2	80
Controller & Accounting	.5	6	1.6	24	2	18	2.0	33	2.0	35	2	38	2	40	2	43
Other		6		5		4		4		4		4		4		4
Sub-total	2.25	69	4.3	151	8	216	6.6	237	6.7	284	7	299	7	317	7	334
Total Support		86	8.0	244	10.5	361	11.2	391	12.7	460	14	487	14	519	14	547
3. General Operations																
General Supplies		5		15		11		15		15		16		16		17
Services & Communications		3		13		26		28		29		28		30		29
Organizational Symposia		19		-		-		-		-		-		-		-
Other		1		2		3		6		6		6		6		6
Total General Operations		28		30		40		49		50		50		52		52
4. Contingencies 2%						35		35		43		45		47		50
5. Prov. for future Price Changes 7%												161		353		582
TOTAL CORE	9.0	352	29.9	1,024	47.5	1,768	47.3	1,768	55.7	2,181	57	2,458	57	2,790	57	3,170
By Object of Expenditures																
Personal Service Costs		212		692		1,176		1,145		1,422		1,500		1,611		1,723
Travel		49		157		294		302		398		423		433		453
Supplies		58		95		151		157		183		191		201		215
Services		17		58		71		84		93		96		99		100
Veh. Mach. & Transport.		12		22		41		45		42		42		46		47
Contingencies 2%		4		-		35		35		43		45		47		50
Total		352		1,024		1,768		1,768		2,181		2,297		2,437		2,588
Prov. for future Price Changes						-		-		-		322		730		1,246
TOTAL CORE BUDGET		352		1,024		1,768		1,768		2,181		2,619		3,167		3,834

1975 BUDGET
THE INTERNATIONAL POTATO CENTER
Summary of Sources and Application of Funds
(US\$ thousands)

Sources of Funds	Actual	Actual	Estimate	Budget	Budget	Projected		
	1972	1973	1974	1974	1975	1976	1977	1978
1. Core Funds								
a) Multi-purpose								
DANIDA	82			175				
IBRD	88							
Sweden Government		91		160				
Switzerland Government		65		70				
	<u>170</u>	<u>156</u>		<u>405</u>				
b) Unrestricted								
USAID	100	340		550				
UKODA		51		120				
Canada		200		320				
Rockefeller Foundation				150				
	<u>100</u>	<u>591</u>		<u>1,140</u>				
c) Restricted								
Rockefeller Foundation	82	82						
Germany		40		43				
Netherlands		180		180				
	<u>82</u>	<u>302</u>		<u>223</u>				
d) Gross Core Funds Required	352	1,049		1,768				
Less: Unexpended Core Balances								
Less: Earned Income								
Plus: Overdisbursed Core								
e) Net Core Funds Required from C.G.	<u>352</u>	<u>1,049</u>	<u>1,768</u>	<u>1,768</u>	<u>2,181</u>	<u>2,458</u>	<u>2,790</u>	<u>3,170</u>
2. Capital Funds								
IBRD	72			-				
DANIDA	68	225		-				
IDB				250				
Germany		29		27				
Sweden Government		59		46				
Other				154				
Gross Capital Funds Required	<u>140</u>	<u>313</u>	<u>477</u>	<u>477</u>	<u>212</u>	<u>155</u>	<u>140</u>	<u>90</u>
3. Total Funds Required from the C.G.	<u>492</u>	<u>1,362</u>	<u>2,245</u>	<u>2,245</u>	<u>2,393</u>	<u>2,613</u>	<u>2,930</u>	<u>3,260</u>
4. Special Projects	-	-	-	150	400	750	1,000	1,250
5. Earned Income								
a) Retained Start of Year			0.5	0.5				
b) Earned in Year		<u>1</u>	<u>0.5</u>	<u>0.5</u>				
Total Earned Income (End of Year)		<u>1</u>	<u>1</u>	<u>1</u>				
6. Total Gross fund Required	492	1,363	2,246	2,396				
Less: funds available		-						
7. Net funds Required	<u>492</u>	<u>1,363</u>	<u>2,246</u>	<u>2,396</u>	<u>2,793</u>	<u>3,363</u>	<u>3,930</u>	<u>4,510</u>
Application of Funds								
1. Core Operations	352.5	1,024	1,768	1,768	2,181	2,458	2,790	3,170
2. Working Capital	-		190	190				
3. Capital Expenditures	140	256	287	287	212	155	140	90
4. Earned Income		<u>.2</u>	<u>0.5</u>	-				
Sub-total	<u>492.5</u>	<u>1,280.2</u>	<u>2,245.5</u>	<u>2,245.5</u>	<u>2,393</u>	<u>2,613</u>	<u>2,930</u>	<u>3,260</u>
5. Special Project				150	400	750	1,000	1,250
6. Unexpended Balances - Carry-over								
Restricted Funds		25						
Capital Grants		57						
Retained Income	<u>(0.5)</u>	<u>.8</u>	<u>0.5</u>	<u>0.5</u>				
Total Application of Funds	<u>492</u>	<u>1,363</u>	<u>2,246</u>	<u>2,246</u>	<u>2,793</u>	<u>3,363</u>	<u>3,930</u>	<u>4,510</u>

1975 BUDGET
THE INTERNATIONAL POTATO CENTER

Summary Financial Data 1972 - 1974
(US\$ thousands)

	1972	1973	Estimate 1974	Budget	
				1974	1975
<u>Current Assets</u>					
Cash	111	244	150	214	200
Receivables from Donors	50	2	35	35	70
Other Receivables	25	22	40	45	53
Inventories	-	-	5	5	6
Prepaid Expenses	6	3	10	10	10
Other Current Assets	-	-	2	2	2
Total Current Assets	<u>192</u>	<u>271</u>	<u>242</u>	<u>311</u>	<u>341</u>
<u>Fixed Assets</u>					
Revolving Fund Balances	-	-	-	2	3
Operating Equipment	-	20	14	34	44
Research Equipment	18	90	161	251	286
Installations	15	50	-	50	58
Furnitures, Fixtures & Off. Equip.	11	32	-	32	35
Vehicles	35	89	45	134	163
Constructions & Buildings	46	71	60	188	288
Site Development	3	5	-	6	27
Other fixed Assets	12	39	7	43	48
Total Fixed Assets	<u>140</u>	<u>396</u>	<u>287</u>	<u>740</u>	<u>952</u>
Total Assets	<u>332</u>	<u>667</u>	<u>529</u>	<u>1,051</u>	<u>1,293</u>
<u>Liabilities</u>					
Current Liabilities	43	118	50	120	150
Payables to Donors & Sponsors	-	-	-	-	-
Total Liabilities	<u>43</u>	<u>118</u>	<u>50</u>	<u>120</u>	<u>150</u>
Prepaid Funds	150	70	-	-	-
<u>Unexpended Funds and Capital Balances</u>					
Capital Balances:					
Working Capital	-	-	190	190	190
Other	140	396	287	740	952
Unexpended Grants:					
Capital Grants		57	-	-	-
Unrestricted		-	-	-	-
Restricted		25	-	-	-
Special Projects		-	-	-	-
Retained Income	(1)	1	2	1	1
Total	<u>139</u>	<u>479</u>	<u>479</u>	<u>931</u>	<u>1,143</u>
Total Liabilities and Capital Balances	<u>332</u>	<u>667</u>	<u>529</u>	<u>1,051</u>	<u>1,293</u>
<u>Sources of Funds</u>					
Operating Core	352	1,049	1,768	1,768	2,181
Operating Special Projects	-	-	-	150	400
Capital	140	313	477	477	212
Other Income	-	1	0.5	0.5	-
Total	<u>492</u>	<u>1,363</u>	<u>2,245.5</u>	<u>2,395.5</u>	<u>2,793</u>
<u>Application of Funds</u>					
Operating Core	352.5	1,024	1,768	1,768	2,181
Operating Special Projects	-	-	-	150	400
Working Capital	-	-	190	190	-
Capital - Other	140	256	287	287	212
Retained Income	-	2	0.5	0.5	-
	<u>492.5</u>	<u>1,280.2</u>	<u>2,245.5</u>	<u>2,395.5</u>	<u>2,793</u>
UNEXPENDED BALANCES	<u>(0.5)</u>	<u>82.8</u>	-	-	-
<u>Memo Items</u>					
Many years of Staff:					
Care Program	9	29.9	47.5	47.3	58.7
Special Projects	-	-	-	3	5
Total	<u>9</u>	<u>29.9</u>	<u>47.5</u>	<u>50.3</u>	<u>63.7</u>

THE INTERNATIONAL POTATO CENTER
TABLE OF POSITIONS AND MANPOWER

Annex V

SENIOR STAFF						SUPPORT STAFF					
POSITIONS*			MAN-YEARS			SCIENTIFIC AND SUPERVISORY POSITIONS*			MAN-YEARS		
1973	1974	1975	1973	1974	1975	1973	1974	1975	1973	1974	1975
Director (1)	Director (1)	Director (1)	1.0	1	1	Accountant (1)	Accountant (1)	Accountant (1)	.6	1	1
Deputy Director (1)	Deputy Director (1)	Deputy Director (1)	.2	1	1	Virologist (2)	Virologist (2)	Virologist (2)	2.0	2	2
Executive Officer (1)	Executive Officer (1)	Executive Officer (1)	1.0	1	1	Mycologist (2)	Mycologist (3)	Mycologist (2)	2.0	3	2
	Controller (1)	Controller (1)		1	1	Bacteriologist (2)	Bacteriologist (1)	Bacteriologist (2)	1.5	1	2
	Consultant-Outreach (1)	Consultant-Outreach (1)			.5	.7	Nematologist (4)	Nematologist (3)	1.5	1.3	4
Pathologist (1)	Pathologist (1)	Pathologist (1)	1.0	1	1	Geneticist (2)	Geneticist (2)	Geneticist (2)		1.3	2
Mycologist (1)	Mycologist (1)	Mycologist (1)	1.0	1	1	Breeder (4)	Breeder (3)	Breeder (3)	2.5	2	2
Virologist (1)	Virologist (1)	Virologist (1)	.3	1	1	Horticulturist (2)	Horticulturist (2)	Horticulturist (2)	.2	2	1
Nematologist (1)	Nematologist (1)	Nematologist (2)	.5	1	2	Physiologist (2)	Physiologist (4)	Physiologist (5)	.6	3	5
Geneticist (1)	Geneticist (1)	Geneticist (1)	.7	1	1	Taxonomist (2)	Taxonomist (2)	Taxonomist (2)	.8	1	2
Breeder (1)	Breeder (1)	Breeder (1)	.5	1	1	Agronomist (3)	Agronomist (3)	Agronomist (3)	2.2	2.5	3
Physiologist (1)	Physiologist (3)	Physiologist (2)	.5	1.8	2	Entomologist (2)	Entomologist (1)	Entomologist (1)	1.0	1	1
Agronomist (1)	Agronomist (1)	Agronomist (1)	.4	1	1	Language (1)	Language (1)	Language (1)	.5	1	1
Taxonomist (1)	Taxonomist (1)	Taxonomist (1)	.3	1	1	Librarian (1)	Librarian (1)	Librarian (1)	1.0	1	1
Outreach (1)	Outreach (1)	Outreach (1)	1.0	1	1	Station Supt. (1)	Station Supt. (1)	Station Supt. (1)		1	1
Seed technologist (1)	Seed technologist (1)	Seed technologist (1)	1.0	1	1	Editor (1)	Editor (1)	Editor (1)		.7	1
Economist (1)	Economist (1)	Economist (1)	.1	1	1	Production Specialist (2)	Production Specialist (7)	Production Specialist (6)	2.0	4.7	6
Training Officer (1)			1.0			Controller (1)			1		
TOTAL (16)	(19)	(19)	10.5	17.3	18.7	(29)	(38)	(39)	19.4	30.0	37.0

SUPPORT STAFF											
CLERICAL						OTHER SUPPORT					
POSITIONS*			MAN-YEARS			POSITIONS*			MAN-YEARS		
1973	1974	1975	1973	1974	1975	1973	1974	1975	1973	1974	1975
Secretaries (8)	Secretaries (12)	Secretaries (14)	5.7	11	12.5	Technicians (10)	Technicians (14)	Technicians (20)	8	12	20
Bookkeeper (1)	Bookkeeper (2)	Bookkeeper (2)	1	2	2	Mechanics (1)	Mechanics (2)	Mechanics (2)		1	1.5
Receptionist (1)	Receptionist (1)	Receptionist (1)	1	1	1	Drivers (2)	Drivers (7)	Drivers (8)	2	5	7
Purchasing Agent (1)	Purchasing Agent (1)	Purchasing Agent (1)	1	1	1	Guards (1)	Guards (2)	Guards (2)	1	1.5	2
	Clerks (1)	Clerks (2)		1	2	Messenger (1)	Messenger (2)	Messenger (2)	1	2	2
	Administ. Asst. (1)	Administ. Asst. (1)		1	1	Cleaners (2)	Cleaners (5)	Cleaners (5)	2	4.5	5
						Laborers (24)	Laborers (31)	Laborers (39)	19	24	33
TOTAL (11)	(18)	(21)	8.7	17	19.5	(40)	(62)	(78)	33	50	70.5

*The budget request is in accordance with "man-years" and not by number of positions.

RESEARCH DEPARTMENTS
OR TEAMS

Pathology
Breeding & Genetics
Nematology
Physiology
Taxonomy
Outreach & Training

SUPPORT DEPARTMENTS

a) Support Dept.
Buildings & ground
Station operations,
etc.

b) General Administrative
Office of Director
Accounting
Purchasing
Personnel, etc.

ANNEX VI

CIP 1975 CAPITAL BUDGET

EQUIPMENT

Office equipment (4 typewriters and office furniture for Huancayo)		\$14,000\
Field equipment (irrigation system for jungle location, tractor accessories, jungle location)		12,000.
Laboratory (mainly for Huancayo facilities)		
tissue culture chambers and equipment	\$ 6,000	
Pathology	10,000	
Breeding	6,000	
Nematology	6,000	
Taxonomy	3,000	
Stress physiology	5,000	
Miscellaneous	<u>5,000</u>	41,000

VEHICLES

2 Land Rovers	10,000	
1 Half-ton, 4-wheel drive	8,000	
2 Half-tons with double cabins	<u>12,000</u>	30,000

CONSTRUCTION

4 Fiber glass greenhouses	22,000	
Staff house facilities at Huancayo	33,000	
Electron microscope and training facilities in Lima	<u>60,000</u>	<u>115,000</u>
		<u>212,000</u>